

## VORTEX 2

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In the late spring of 2009 and 2010, I participated in the second VORTEX project. In terms of my meteorological and academic career so far, it was the most rewarding experience I've had yet. The experiences, people, equipment, and relationships are something that I will never forget, and I hope that I get to participate in a project such as VORTEX 2 again, if the opportunity should come about.

VORTEX stands for the Verification Of Rotation in Tornadoes Experiment. The first VORTEX was in the mid 90's, and VORTEX 2 was the second installment of research geared towards understanding tornadoes. The main questions we looked to answer are: Why do tornadoes form? Why do they not form? Other questions included: Why are some tornadoes short-lived and others long-lasting? What is tornado structure? How strong are winds on the ground? How can we forecast tornadoes better? There were over 100 scientists and graduate students in over 40 science and support vehicles, which included 10 mobile Doppler radars, 12 mobile mesonet vehicles (which carried instrumentation on the vehicle that recorded temperature, wind, relative humidity, and pressure), 38 deployable instruments like tornado pods and sticknets (which also record temperature, wind, relative humidity and pressure), weather balloon launching teams, damage survey teams, and photogrammetry teams. The National Science Foundation and the National Oceanic and Atmospheric Association contributed over \$10 million for the 2-year project. Over a dozen universities were part of the project, and we even had participants from other countries involved with VORTEX 2. In 2009 and 2010, I participated for the entire duration of the project from early-May until mid-June, which equates to 45 or so days of fully funded storm chasing for each year!

My job on VORTEX 2 was with the Center for Severe Weather Research (CSWR). CSWR is headed by Dr. Josh Wurman, who is famous for being on the TV show Storm Chasers, and also, for being one of the initial developers of the Doppler On Wheels (DOW). Dr. Wurman had DOWs 5, 6, and 7, along with 6 mobile mesonet vehicles. Each mobile mesonet vehicle not only contained instrumentation on the vehicle itself, but also had 3 tornado pods each. An easy way to visualize deploying tornado pods is from the movie Twister, where the main characters had to get out in front of the tornado and put a large, heavy piece of instrumentation in front of the tornado, and get out of its path. That was my job; I deployed tornado pods and also helped with maintenance of the radar vehicles, mesonets, and instrumentation.

Besides the obvious excitement of storm chasing, a lot of other things needed to be done daily in order to accomplish our goals. A typical day on VORTEX 2 started early, around 7 am. In my group, each vehicle had a responsibility, which included things like collecting data each night, setting up equipment for morning weather discussions, getting food for the day, making sure instrumentation was working properly, and other jobs. My job was setting up the equipment for the weather briefings, which included bringing a laptop, projector, and other

items into a hotel conference room. Sometimes, there was a nice big room set up with chairs and everything for about 100 people; other times, it was a very small room big enough for about 10 people. Just one of the many difficulties with living on the road in hotels for 45 days! After I set that up, I would usually get breakfast, then shower and get the vehicle ready for the upcoming drive. By this time, it was usually time for the weather briefing, which included the weather discussion and the driving target for the day. Driving times varied; sometimes we were fine where we were, other times we may have to drive 2, 3, or even 8 hours to get ready for the next day if it was an off day. Once the briefing was over, we gathered everybody up, and headed to the target. Normally, the target was perfect time for lunch, so 100+ people would gather in some small town and overwhelm fast food places and stores like Wal-Mart! We normally had plenty of time, since the storms don't usually fire until mid or late afternoon, so we were able to eat and what not. Once storms began to fire, we would head out to them, chase and deploy instrumentation, then head to the next hotel location. While we drove, we usually gathered the data we collected so by the time we got to the hotel, we could hand it to the person who collected the data. By this time, it is usually 8:00 or even later, depending on the drive (we sometimes had to position ourselves for the next day). We would eat dinner, enjoy a few drinks and conversation, then go to sleep and do it all over again the next day. Of course, a lot of other things happened, like off-day activities and sightseeing, driving days, malfunctions, etc, but that is the average day on VORTEX 2!

The interesting experiences, besides seeing just about every possible thunderstorm structure and chasing them, would be touring the great plains and learning about the towns we traveled to, meeting people (who treated us like celebrities and always wanted to come talk to us!), and also, working with the people that, for the most part, wrote the textbooks that I used during my undergraduate days. I found it very rewarding to not only be involved with the project, but be on a first name basis with these important figures in meteorology. I got a chance to see all of the things I learned about in class in the field with the men and women that taught them. It is really nice to chat with them, even today, and let them know what I have been up to and what kinds of research topics they are involved in. I will leave specific experiences, and possibly some storm stories, for another article!